EGU24-20039, updated on 15 Feb 2025
https://doi.org/10.5194/egusphere-egu24-20039
EGU General Assembly 2024

Why is the pesticide endosulfan not disappearing from the global environment after ban?

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Endosulfan is a persistent organochlorine pesticide that was globally distributed before it was banned in 2013, and it continues to cycle in the Earth system. The chemical kinetics of the gas-phase reaction of *α*-endosulfan with the hydroxyl radical (OH) was studied by means of pulsed vacuum UV flash photolysis and time resolved resonance fluorescence (FP-RF) as $k_{OH} = 5.8\times10^{-11}$ $e^{(-1960\ K/T)}$ $cm^3\ s^{-1}$ with an uncertainty range of 7×10^{-12} $e^{(-1210\ K/T)}$ to 4×10^{-10} $e^{(-2710\ K/T)}$ $cm^3\ s^{-1}$. This corresponds to an estimated photochemical atmospheric half-life in the range of 3-12 months, which is much longer than previously assumed (days to weeks).

Comparing the atmospheric concentrations observed after the global ban of endosulfan with environmental multimedia model predictions, we find that photochemical degradation in the atmosphere is slower than biodegradation in soil or water, and that the latter limits the total environmental lifetime of endosulfan. We conclude that the lifetimes typically assumed for soil and aquatic systems are likely underestimated and should be revisited, in particular for temperate and warm climates. Moreover, the pollutant may persist in soil and sediment burdens disconnected from compartmental interfaces.